

2. Roberts, Dr. Thos. S. The Prothonotary or Golden Swamp Warbler (*Protonotaria citrea*) a Common Summer Resident of Southeastern Minnesota. Auk, XVI, 1899. pp. 236-246.

3. Adams, C. C. The Migration Route of Kirtland's Warbler. Bull. Mich. Ornith. Club, V, 1904, pp. 14-21.

4. Anderson, R. M. The Birds of Iowa. Davenport, Iowa, 1907.

Sioux City, Iowa.

HABITS OF THE OLD-SQUAW (*HARELDA HYEMALIS*) IN JACKSON PARK, CHICAGO.

BY EDWIN D. HULL.

INTRODUCTION.

The following notes are the result of three winters' study of the habits of the Old-squaw in Jackson Park, Chicago, Ill., from 1912 to 1914 inclusive. It is regretted that observations could not have been made for a few years more, and it is conceivable that exceptions to some of the statements contained herein might be made through additional study, but it seems advisable to publish what observations there are, as the stock of information concerning our waterfowl is generally conceded to be woefully deficient.

PREVIOUS LITERATURE.

I have been able to find but two extensive papers on the habits of this bird, both of which have been noted carefully. In 1892 G. H. Mackay (Auk 9: 330-337. 1892) gave an excellent account in a general way of the species in New England, where the birds were observed almost exclusively on salt-water. In 1913 a more intensive study was recorded by J. G. Millais (British Diving Ducks, Vol. 1, 112-131. 1913). The notes here, however, relate mainly to the habits of the species in the Old World, and likewise on salt-water. No

extended account of the habits of the species inland seems to have been written, and it is in part to supply this deficiency that the following notes are recorded.

ENVIRONMENT.

Jackson Park is noted for its beautiful chain of lagoons, which bears a striking resemblance to a large river. Both ends of the chain are connected with Lake Michigan, at the connections being spanned by bridges. The lagoons in the main are broad and fairly deep at the middle, but become very narrow in places, more especially at the several bridges. Along the sides in shallow water are broad zones of the crisped pondweed (*Potamogeton crispus*), a European plant, not long in this region, but already exceedingly abundant and vigorous. With this species occur a few less conspicuous plants. Rocks have been thrown in about the edges in places. The lake itself which borders the park on the east is sheltered much by a harbor and somewhat by piers built into it. The plants, rocks and piers constitute a very favorable habitat for immense swarms of silvery minnows (*Notropis atherinoides*), which seem to be almost if not entirely the sole source of food for the Old-squaw in this locality.

OCCURRENCE AND ABUNDANCE.

Where two or more birds are found together they do not appear until severe weather sets in, and the lake is covered more or less with ice, but leaving several open places here and there, especially about the piers, where the birds are able to obtain food. My earliest record is January 28, 1912, when eleven were seen, and the latest February 27, 1913, when four were seen. The occurrence of flocks and twos is certainly determined by the weather. Solitary individuals may appear much earlier and remain much later. My earliest record is December 14, 1913, and the latest May 6, 1912. Another very late record is April 8, 1914. In two cases at least these early or late birds appeared following a cold wave, but they were associated with the Lesser Scaup, and in all

probability were not so much dependent on the weather as on the migrations of the Scaups, less boreal in habit and the most abundant ducks in this region. They may, however, remain after the Scaups have left for the south, and also leave ahead of the Scaups in the spring, after sojourning with them a day or more, so that the weather plays a rôle even here, but is not the only factor.

The ducks in twos or more keep to the lake or more rarely in the harbor, and only the solitary ducks enter the lagoons, and not then except when they occur with the Scaups. In midwinter the lagoons are usually frozen solidly over, but exceptions occur, so that the absence of the flocks from them cannot be always thus explained.

The birds seem to be growing scarcer every year. The size of the flocks is decreasing rapidly, and single birds are very common. The largest flock noted was eleven in 1912, and the next largest six in 1913.

SOCIAL LIFE.

The birds when more than one keep to themselves, but when isolated are quite likely to be seen with other species, although occasionally utterly alone. If the birds are mated at this season of the year it is hardly possible to pick out the pairs on account of all the birds keeping together. Furthermore, even numbers, which might indicate pairs, are not one-half so common as odd numbers, which show, of course, at least one unmated bird. The birds seen in twos are not paired, either, so far as can be ascertained. Single birds have been found associated with the Lesser Scaup and the American Goldeneye, particularly during periods of inactivity, although when feeding they may desert the other species. Quite often the Scaups feed in too shallow water, as along the edges of the lagoons, to suit the tastes of the Old-squaw, while the Goldeneyes often feed in water entirely too deep. A bird seen February 17, 1914, with a small flock of American Goldeneyes out in the lake quite a distance from the piers left the flock when it wanted to feed, and came to the piers, where the water was much more shallow, but after its hunger was

satisfied returned to its companions. Even when the Golden-eyes were diving vigorously in the deeper water the Old-squaw made no attempt to imitate them. In their association with these other species the Old-squaws keep somewhat aloof, and never display the same familiarity with the birds of a different species as do the individuals of a single species toward each other. They generally keep a certain distance away from the birds of another species, and may even attack them if they get too close; similarly the birds of another species may attack them.

FOOD.

The feeding ground is a place apart, but mainly close to the resting ground, so that it is reached by a brief swim. After feeding the birds return to their resting ground. When a suitable feeding locality is once found the birds return to it again and again, and likewise the same resting ground is repeatedly chosen.

The food no doubt is almost entirely animal, and would seem to be restricted to a single species of fish, the silvery minnow, a long slender fish which fairly swarms about the piers and in the lagoons. The stomach of an adult female found floating in a lagoon April 1, 1912, contained approximately 140 of these minnows, all entire, besides many fragments of the same fish, but no other food. The fish averaged about two inches in length. Another fish very abundant in this region is the yellow perch, but it is rough and spiny, and is no doubt avoided, as so much better food can be had. Whether any vegetable food is utilized is uncertain. An adult male was seen to be nibbling along the sides of a bit of loose piling, as if scraping off algae, but this may not have been the case.

The food is swallowed under water. Millais says concerning a pair of tame birds that they swallowed pieces of food smaller than a minnow below usually, while larger pieces were brought to the surface and vigorously shaken. I have yet to see, however, any bringing of food to the surface of the water.

DIVING.

Millais says that in diving they use the feet only, but according to Chapman after Townsend they use their wings (*Birds of Eastern North America*, p. 198, 1912). My own observations confirm those of Townsend. March 13, 1914, I was fortunate in witnessing the diving of an exceedingly tame bird about the piers. In this bird the movement of the wings was very plainly visible for some time as it dived obliquely in the clear water.

In all but one instance the birds spread their wings and disappear almost immediately, but the bird of March 13, 1914, just noted, adopted a much more leisurely method. It first put its head under water, then moved forward a few feet with wings folded, then flapped its wings a few times, moving forward all the while, and finally disappeared beneath the surface. In feeding this action was invariable in all the observations made. When frightened, however, this bird dove as quickly as any other. The diving as observed in this bird, as I have stated, was in a very oblique direction. The bird started many feet out, diving towards the pier, and on reaching it turned and worked along the pier for some distance before rising to the surface. Once it was seen to dash just beneath the water for the pier, and on reaching it come at once to the top. In diving much splashing is made, which is not the case in a duck which dives with folded wings, as in the Lesser Scaup. The time spent under water was noted in nineteen instances, the maximum being twenty-five seconds, minimum ten seconds, average about eighteen seconds. Food was probably easily obtained, however, and the water relatively shallow. No doubt a much longer time could be endured. Millais gives the usual time as being from thirty seconds to one minute.

VOICE.

In flocks the Old-squaws are noisy birds, as noted by Mackay, and their cries are adequately described by him. I have found single birds, however, with but one exception, absolutely silent. The single exception was the bird occur-

ring with the Goldeneyes February 17, 1914, cited under "Social Life." This bird in leaving its companions for the piers to feed, on its way called a few times at fairly definite intervals, a subdued call of two notes, best described, perhaps, as *o-one*. The significance of this brief cry could not be determined with certainty. It was noted that the bird in going to its feeding ground was alert, so that this call may have indicated a slight alarm.

FLIGHT.

Birds in flocks are often very active, but single birds are inclined to fly very little if at all. Even when badly frightened they will try to escape by diving instead of taking wing. In spring, however, when they are about to depart for the north, they become more active. The bird seen April 8, 1914, took wing when scared, and another seen March 22, 1914, would sometimes fly from its feeding ground about the piers farther out into the lake, where it rested. But ordinarily single birds will not fly even when the other ducks with which they are associated take flight. This unwillingness to fly would seem to bear no relation to age, for a bird which could not be induced to take flight under any circumstances was an adult male upon which I made observations from December 14 to December 28, 1913 (see Auk 31: 244, 245. 1914). According to Millais, however, young birds will not rise on their first arrival from the north, differing in this respect from the adults.

BATHING.

Bathing is not undertaken except after diving for food, and in one instance, where the bird made a single dive, no bathing followed at all. Occasionally after feeding the bird delays bathing in order to preen, but more often preening follows bathing. In cases of prolonged feeding bathing may take place at different intervals, a period of diving being followed by a period of bathing. Once after a bird had bathed it climbed out on a bit of piling, and on getting off bathed again. Bathing very seldom takes place on the feeding

ground, the action being delayed until the resting place is reached. In one instance, however, a bird was seen to bathe while coming from its feeding ground.

Bathing is a very leisurely process at first, being merely a dipping of the head under water, but soon increases in vigor, being accompanied by much flapping of wings and splashing of water, followed in all instances by preening, whether or not a preliminary preen was undergone before bathing commenced. In only one instance was bathing so vigorous as to carry the bird completely under the surface.

DRINKING.

Drinking takes place but seldom, only two instances having been noted. The bird seen from December 14 to December 28, 1913, was seen to drink twice in rapid succession about 40 minutes after feeding, and another very hungry bird seen March 13, 1914, was correspondingly thirsty, drinking again and again between dives, often several times in succession. Occasionally, however, the bill was merely dipped in the water, the head not being thrown back nor the swallowing reflex taking place afterward. Probably in most cases enough water is taken in with the food.

PREENING.

Preening always takes place after bathing, and occasionally before, as I have said, and also at various intervals throughout the day. The belly feathers are not given the same attention that the other feathers are. In one instance the bird would not preen these feathers until after it had climbed out on a piling, and in another case the bird stood on its tail in the water in the manner cited by Millais. These were the only instances noted, while the feathers of the back and sides undergo a thorough preening continuously.

PERCHING.

While the birds never come out on the shore, keeping strictly to the water, a bit of piling stuck in the bottom of

a lagoon in a slanting direction, with only a portion of the top out of water, was made much use of by one bird to preen and rest. While on the piling, however, the bird was always more or less alert, seeming to realize that it was not altogether in its proper element, and although it would squat down after a while it was never seen to go to sleep, at least it never put its head under its wing, as it did so often in other situations, although the head was often drawn down snugly between the shoulders.

MORTALITY.

My observations on this point agree very closely with those of Mackay, the deaths happening to females and immature males. Along the south shore of Lake Michigan, the Indiana side, I have seen a few dead adult males, but in every instance the bodies were so torn by gulls that the cause of death could not be determined. March 31, 1914, I found an adult male on the beach at Jackson Park, in good condition, but with very little fat. There were no wounds apparent except a bad one on the back, which was probably made by a gull, which bird may have been the cause of the Old-squaw's death, although it does not appear likely. Dead birds have been found in all winters except that of 1912-1913, the mildest of all. But not even in the severest winters have I found a bird that was starved to skin and bones, although besides the adult male just referred to, none of them possessed any fat.

THE KENTUCKY WARBLER IN COLUMBIANA COUNTY.

By H. W. WEISGERBER, Salem, Ohio.

I am fully convinced that the Kentucky Warbler is firmly establishing itself along the northern boundary of Columbiana County, for a bird could scarcely appear for three successive years in a given locality and not continue to do so, provided, of course, that conditions remained the same.